



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

Extract DNA from fruit using soap and rubbing alcohol.



Supplies Required:

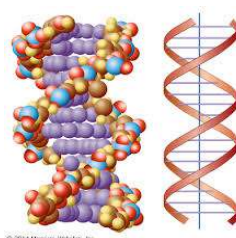
- Sliced fruit such as kiwi, peaches, strawberries, or bananas
- Coffee filter or fine mesh strainer
- Towels or newspaper to cover the table or workspace
- Water
- Salt
- Shampoo
- Spoon
- Cups
- Chilled rubbing alcohol
- Paperclip or popsicle stick

Video

Learn how to extract DNA from strawberries: <https://tinyurl.com/nv529uq>

Overview

DNA stands for deoxyribonucleic acid and is one of the two types of nucleic acid in cells. Humans are made up of many, many cells that we can't see and each cell has a job. Some clusters of cells make up our muscles, some make up our bones—and all together they make our bodies! But how does each cell know what to do? That's where DNA comes in. It tells the cells what to do. DNA is like the boss of the company. It gives cells instructions that it passes down in the form of codons, which is a three-block code. These codes are made from a string of four different letters which have best friends they favor and prefer to hold hands with. A likes T, and G likes C, and when put together they become instructions for the cells.



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Instructions

1. Start by covering your workspace with towels or newspaper.
2. Slice and rinse off all your fruit.
3. Put a handful of fruit in the cup and use your fork to mash the fruit up until it is smooth.
4. Add water to your cup of fruit until you have doubled the volume.
5. Add two squirts of shampoo into your fruit and water mixture.
6. Add a teaspoon of salt and gently stir--try not to create the foam from the shampoo.
7. Use your coffee filter to strain the mixture into a second cup, you can throw away the fruit but keep the liquid.
8. Add an equal amount of cold rubbing alcohol to the liquid in the cup.
9. The alcohol will form a layer on top of the fruit liquid. Between the layers there should be a layer of clear goopy substance. This is the DNA!
10. Take a paperclip or a popsicle stick and fish it out. Make observations!

Additional Resources

Think About It! What did you need to do in order to separate the DNA from the fruit? What can you infer about the density of fruit DNA compared to fruit juice and rubbing alcohol? Try #2 below! How is the fruit DNA similar to your own DNA? How is it different?

1. Learn about DNA with Dr. Binocs: <https://tinyurl.com/yynkhfts>
2. Extract your OWN DNA! <https://tinyurl.com/y7w8ot5n>
3. How does DNA replicate? <https://tinyurl.com/bkzb55d>

Share It Out

Share on social media: Make a video showing the DNA extraction process. Share what you know about DNA with your friends and family on social media using the hashtags:

#DNAExtraction
#ProjectExploration
#StemAtHome

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 233. Learn more at www.projectexploration.org/explore-store

Join PE's character contest!

Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at: www.projectexploration.org/character-contest.



Call or text us for help: 312-772-6634

www.projectexploration.org